OPTICAL DISC STORAGE APPARATUS

Technical Field

[0001] The invention relates generally to apparatus for housing, storing, transporting and/or protecting individual and multiple optical discs.

Background

[0002] Optical disc media is used to store data in various formats, which may be read by optical means (e.g. laser reading head(s)). For example, optical discs may include digital video discs (DVD's), audio compact discs (CD's), video compact discs (VCD's), super video compact discs (SVCD's), writeable compact discs (CDR's), re-writeable compact discs (CDRW's) and the like. The term "optical disc(s)" is used in this description and the accompanying claims to include any such optical storage media.

[0003] Optical discs are generally sensitive to physical contact, which may cause abrasion, bending and impact damage, for example. Optical discs may also be sensitive to other environmental factors, such as temperature, which may cause warping of the disc. Optical discs may also be sensitive to contaminants, such as dust, dirt and oil, for example. To protect optical discs and the data contained thereon, it is generally desirable to house individual optical discs in protective containers when the optical discs are not in use.

[0004] Patents related to optical disc storage containers include:

- U.S. Patent No. 4,613,044 (Saito et al.);
- U.S. Patent No. 4,736,840 (Deiglmeier);
- U.S. Patent No. 4,998,618 (Borgions);
- U.S. Patent No. 5,011,010 (Francis et al.);
- U.S. Patent No. 5,168,991 (Whitehead et al.);
- U.S. Patent No. 5,205,405 (O'Brien et al.); and

- U.S. Patent No. 5,425,451 (Blase).

[0005] In addition to providing containers for individual optical discs, it is desirable to provide containers for multiple optical discs.

[0006] It is also desirable to provide apparatus for storage and/or transport of multiple optical discs and their containers. Prior art techniques for storing multiple optical discs typically involve resting a flat edge of the individual optical disc containers on a shelf of some type.

Summary of the Invention

[0007] One aspect of the invention provides a container for housing optical discs. The container comprises a base and a lid. An optical disc may be housed between the base and the lid. The base may comprise a retainer for releasably holding an optical disc against a surface thereof. The lid is pivotally coupled to the base by a pivot joint, which permits pivotal motion of the lid relative to the base about a pivot axis that is substantially orthogonal to the plane of the disc.

[0008] The container also comprises a hook which may be used to couple the container to a rod. The hook may be formed on a perimeter of the lid, the base or both the lid and the base. Alternatively, the hook may be formed by a hook member. The hook may comprise a finger that extends around a portion of the pivot joint. An edge of the finger may define an inwardly extending channel which leads towards the pivot joint and terminates in a bore located within the pivot joint. The width of the bore may be greater than the width of the channel immediately outside of the bore.

[0009] The pivot joint may comprise a semi-annular lid member which extends from the lid towards the base in a direction parallel to the pivot axis and a semi-annular base member that extends from the base towards the lid in a direction parallel with the pivot axis. The semi-annular lid and base members may be slidably coupled to one another to enable pivotal movement of the lid with respect to the base. The pivot joint may have a bore through its center. An edge of the bore may be formed by the semi-annular base member and/or the semi-annular lid member. The bore may be semi-circular in shape. One of the lid or the base may have a semi-annular groove that receives the semi-annular member from the opposing one of the lid or the base. The semi-annular member may have a flange and the semi-annular groove may have a corresponding notch which receives the flange and prevents the lid from inadvertently coming apart from the base.

[0010] Some embodiments of the container comprise a latch mechanism for maintaining the lid in a closed pivotal orientation with respect to the base. The latch mechanism may comprise one or more protrusions on the lid (or the base) which project into one or more corresponding indentations on the base (or the lid) when the lid is in the closed pivotal orientation.

[0011] Some embodiments of the container comprise a pivot joint locking mechanism for preventing pivotal movement of the lid with respect to the base. The pivot joint locking mechanism may comprise a shaft, which is slideable to a locking position where a portion of the shaft projects into the pivot joint to prevent pivotal movement of the lid with respect to the base.

[0012] Another aspect of the invention provides apparatus for storage and/or transport of optical disc containers. The apparatus

comprise one or more rods onto which the optical disc containers may be mounted by coupling the hook to the rod.

[0013] Further applications of the invention and features of specific embodiments of the invention are described below.

Brief Description of the Drawings

[0014] In drawings which depict non-limiting embodiments of the invention:

Figure 1 depicts a typical optical disc;

Figure 2 is a plan view of an optical disc container according to a particular embodiment of the invention in a partially open configuration;

Figure 3 shows how the Figure 2 container may be coupled to a rod;

Figure 4 is an isometric view of a particular embodiment of a multiple disc storage apparatus that may be used to store one or more optical disc containers in accordance with the invention;

Figure 5 is an isometric view of a particular embodiment of a multiple disc storage apparatus that may be used to store one or more optical disc containers in accordance with the invention;

Figure 6 is an isometric view of a particular embodiment of a multiple disc storage apparatus that may be used to store one or more optical disc containers in accordance with the invention;

Figure 7 is an isometric view of a particular embodiment of a multiple disc storage apparatus that may be used to store one or more optical disc containers in accordance with the invention;

Figure 8 is a isometric view of a carrying handle which may be used to transport one or more optical disc containers in accordance with the invention; and

Figure 9 is an isometric view of a multiple disc carrying case that may be used to store and/or transport one or more optical disc containers in accordance with the invention.

Figure 10 is a plan view of an optical disc container according to a particular embodiment of the invention in its closed configuration;

Figure 11 is a plan view of the Figure 10 container in an open configuration;

Figures 12A and 12B are respectively top and bottom plan views of a lid of the Figure 10 container;

Figures 13A and 13B are respectively top and bottom plan views of a base of the Figure 10 container;

Figure 14 is an exploded isometric view of the Figure 10 container;

Figure 15 shows an exploded cross-sectional view of the Figure 10 container;

Figure 16 is an exploded isometric view of an optical disc container according to another embodiment of the invention;

Figure 17 is an exploded cross-sectional view of a multiple optical disc container according to another embodiment of the invention;

Figure 18 is a magnified partial isometric view of a pivot joint in accordance with a particular embodiment of the invention;

Figure 19 is a magnified plan view of an optional pivot joint locking mechanism in accordance with a particular embodiment of the invention;

Figures 20A and 20B are respectively magnified partial isometric views of the lid and base components of a latch mechanism in accordance with one embodiment of the invention; and

Figure 21 is a plan view of an optical disc container according to another particular embodiment of the invention in a partially open configuration.

Detailed Description

[0015] Throughout the following description, specific details are set forth in order to provide a more thorough understanding of the invention. However, the invention may be practiced without these particulars. In other instances, well known elements have not been shown or described in detail to avoid unnecessarily obscuring the invention. Accordingly, the specification and drawings are to be regarded in an illustrative, rather than a restrictive, sense.

[0016] The invention relates to containers for housing, storing, transporting and/or protecting one or more individual optical discs. In accordance with one aspect of the invention, a container comprises a base and a lid which are coupled at a pivot joint for pivotal movement relative to one another. When an optical disc is placed between the base and the lid, the lid may be pivoted (relative to the base) to a closed configuration, where the optical disc is encased within the container. The lid may also be pivoted through a range of open configurations, where the optical disc is exposed for removal from the base by a user. The container also comprises a hook. The lid and the base of the container may be shaped to provide the hook on an outer periphery of the container. Alternatively the hook may be provided by a hook member which may be coupled to the lid, the base or to the pivot joint between the lid and base. Preferably, the hook comprises a finger which at least partially surrounds the pivot joint. The hook is

removably engageable with a rod member to store one or more containers in a variety of storage and/or transport apparatus.

[0017] Figure 1 shows a typical substantially planar optical disc **100**, which comprises a data bearing side **102** and a non-data bearing side **104**. Data bearing side **102** comprises optically readable data (not shown) in a data bearing region (not shown). Disc **100** also comprises an annular non-data bearing region **108** which surrounds and is concentric with central bore **110**. The non-data bearing side **104** of optical disc **100** may comprises a label or decal **106**. Such a label may include information and/or graphics which relate to the contents of the data stored in the data bearing region of disc **100**.

[0018] Figures 2, 3 depict an optical disc container **1** according to a particular embodiment of the invention. Figures 10-15 depict various views of an optical disc container **10** according to a different embodiment of the invention. Figure 21 depicts an optical disc container **510** according to another embodiment of the invention. A number of directional conventions are employed in this description and the accompanying claims to help clarify their meaning. Referring to Figures 2, 10, 11 and **21** and to containers **1**, **10** and **510** depicted therein:

(i) "upward", "upwardly", "upwardmost", "top" and similar words refer to a direction extending out of the page toward the reader;

(ii) "downward", "downwardly", "downwardmost", "bottom", "lower", "lowermost" and similar words refer to a direction extending out of the page away from the reader;

(iii) "vertical", "vertically" and similar words refer to either of the upward or downward directions;

(iv) "inward", "inwardly" and similar words refer to any direction which extends from a perimeter of containers **1**, **10**, **510** towards an interior of containers **1**, **10**, **510**; and

(v) "outward", "outwardly" and similar words refer to any direction which extends from the interior of containers **1**, **10**, **510** towards the perimeter of containers **1**, **10**, **510**.

Those skilled in the art will appreciate that the particular manner in which the containers are depicted and described is a matter of convenience and that the directional words used in this description and in the accompanying claims should not be interpreted narrowly. In addition to these directional words, the words "semi-annular" and "semi-circular", as used in this description and the accompanying claims, refer respectively to any portion of an annulus and any portion of a circle. These words are specifically not limited to half of an annulus and half of a circle.

[0019] Figures 2 and 3 depict an optical disc container **1** according to a particular embodiment of the invention. In Figure 2, container **1** is in a partially open configuration. A substantially planar optical disc **100** may be housed in container **1** between base **2** and lid **3**. Base **2** is pivotally coupled to lid **3** at pivot joint **4**, which allows lid **3** to be pivoted relative to base **2**. The pivot axis of pivot joint **4** is substantially orthogonal to the plane of optical disc **100**. In the illustrated embodiment, the pivot axis of pivot joint **4** is substantially orthogonal to the page. Preferably, as shown most clearly in Figure 2, pivot joint **4** provides a bore **8** at or near its center.

[0020] Container **1** also comprises a hook **5** formed in at least one of its perimeter edges. In the illustrated embodiment, hook **5** is formed by a finger **6A** on a perimeter edge of lid **3** and a finger **6B** on a perimeter edge of base **2**. Fingers **6A**, **6B** of hook **5** define a channel **7**

which leads inward and terminates at bore **8**. As shown in Figure 3, hook **5** enables container **1** to be coupled to a rod **9** by inserting rod **9** into channel **7** and bore **8**. Because bore **8** is located within pivot joint **4**, lid **3** may still be pivoted relative to base **2** when hook **5** is coupled to rod **9**. This location of bore **8** within pivot joint **4** allows disc **100** to be inserted and/or removed from container **1** without uncoupling container **1** from rod **9** (see Figure 3).

[0021] Because of hook **5**, optical disc container **1** may be coupled to rods in a wide variety of transportation and storage apparatus. Figures 4-9 show various transportation and storage apparatus that take advantage of this feature to store, transport and/or protect optical discs in accordance with the invention.

[0022] Figure 4 depicts a first storage mechanism **410** which comprises a base **414** and a vertically oriented rod **412**. Optical disc containers may be hooked to vertical rod **412**, such that their bases are oriented in a substantially horizontal direction. Rod **412** may optionally be divided into two or more component rods by interposing one or more platforms between the component rods. In the illustrated embodiment, rod **412** is divided into two component rods **412A**, **412B** by intermediate platform **416**. Storage mechanism **410** may be provided with a stopping element **418** at the uppermost end of rod **412** to prevent optical disc containers from sliding off of rod **412**. Stopping elements similar to stopping element **418** may be positioned at other location(s) on rod **412** to prevent optical disc containers from sliding thereon.

[0023] Figure 5 depicts another storage mechanism **420** which comprises a plurality of vertically oriented support members **424A**, **424B**, which support a plurality of horizontally oriented rods **422A**, **422B**, **422C**. Optical disc containers may be hooked to rods **422A**,

422B, **422C**, such that their bases are oriented in a substantially vertical direction. Support members **424A**, **424B** may comprise modular components **426**, **428** at their uppermost and lowermost extent, such that a plurality of storage mechanisms similar to storage mechanism **420** may be stacked on top of one another to provide increased storage capacity.

[0024] Figure 6 depicts another storage mechanism **430** which comprises a plurality of vertically oriented support members **434A**, **434B** which support a plurality of horizontally oriented rods **432A**, **432B**. Rods **432A**, **432B** are spaced apart vertically from one another. Optical disc containers may be hooked to rods **432A**, **432B**, such that their bases are oriented in a substantially vertical direction. Although not illustrated, storage mechanism **430** may be made modular, such that other storage mechanisms similar to storage mechanism **430** may be stacked thereupon to add additional disc storage capacity.

[0025] Figure 7 depicts another storage mechanism **440** which comprises a horizontally oriented base **442** and a plurality of vertical rods **444A**, **444B**, **444C**. Optionally, as shown in the illustrated embodiment, one or more horizontally oriented intermediate platforms **446A**, **446B** may be located at vertically spaced apart positions along the length of rods **444A**, **444B**, **444C**. Optical disc containers having hooks may be housed by storage mechanism **440** by hooking the containers to any one of rods **444A**, **444B**, **444C**, such that their bases are oriented in a substantially horizontal direction. In addition, conventional optical disc containers without hooks may be housed by storage mechanism **440**. Such conventional optical disc containers may be stacked in a horizontal orientation between rods **444A**, **444B**, **444C** in region **448** of base **442** or regions **447A**, **447B** of platforms **446A**, **446B**. Storage mechanism **440** may be provided with stopping elements **449A**, **449B**, **449C** which, in the illustrated embodiment, are positioned

at the uppermost ends of rods **444A**, **444B**, **444C** to prevent optical storage discs from sliding off of rods **444A**, **444B**, **444C**. Stopping elements similar to stopping elements **449A**, **449B**, **449C** may be located at other positions on rods **444A**, **444B**, **444C** to prevent optical discs from sliding thereon.

[0026] Figure 8 depicts an optical disc transportation apparatus **450**, which comprises a rod **454** and a handle **456** coupled to rod **454** at either end thereof. One or more optical disc containers **452** may be hooked to rod **454**. A user may carry transportation apparatus **450** using handle **456**. Transportation apparatus **450** may comprise a pair of stopping elements (not shown) which may be positioned along the length of rod **454** to prevent movement of optical disc containers **452** thereon.

[0027] Figure 9 depicts an optical disc transportation apparatus **460** which comprises a bag **468** having a handle **466** and a rod **464**. One or more optical disc containers **462** may be hooked to rod **464** such that optical disc containers are housed inside bag **468**. Bag **468** may comprise a lid **465**, which may be closed using fastening element **467**. Fastening element may comprise one or more hook and loop fasteners or zippers, for example.

[0028] Those skilled in the art will appreciate that there are many alternative storage and transportation apparatus comprising rods to which optical disc container **1** may be coupled by hook **5**. The invention should be understood to incorporate any such apparatus.

[0029] Figures 10-15 depict a container **10** according to another particular embodiment of the invention. Figure 10 shows a top plan view of container **10** in its closed configuration. A substantially planar optical disc **100** (Figure 1) may be encased between base **12** and lid **14**.

Preferably, optical disc **100** is removably held in base **12** via its central bore **110** by disc retainer **18**. Base **12** is pivotally coupled to lid **14** at pivot joint **16**. Pivot joint **16** preferably enables lid **14** to be pivoted about pivot axis **16A** (Figure 15) through 360 degrees relative to base **12**, providing optical disc container **10** with a wide range of open configurations. Figure 11 depicts container **10** in a particular open configuration, wherein lid **14** is pivoted relative to base **12**, such that optical disc **100** may be disengaged from retainer **18** and removed from between lid **14** and base **12**. Container **10** also comprises a hook **62** which may be used to hang container **10** from a rod (not shown) or to otherwise couple container **10** to a rod. In the illustrated embodiment, hook **62** comprises a semi-circular shaped central bore **64** defined by finger **63**, which at least partially surrounds pivot joint **16**.

[0030] As best seen in Figures 13A, 13B and 14, the perimeter of base **12** comprises a pair of straight edges **20A** and **20B** that extend substantially orthogonally from the sides of pivot joint **16**. At their distal ends, straight edges **20A** and **20B** respectively become arcuate edges **22A**, **22B**, which have a center of curvature located approximately at the center **40** of base **12**. Arcuate edges **22A**, **22B** extend to meet either end of straight edge **24**, which forms part of an optional latch mechanism **26** (see Figure 20 and accompanying discussion below). As shown in Figure 13B, the bottom side **28** of base **12** may be substantially planar. The upper side of base **12** (Figure 13A) may comprise a number of features including retainer **18**, base plane **30**, rail **32** and annular platform **34**. The upper side of base **12** (Figure 13A) also comprises a number of features that form part of pivot joint **16** and latch mechanism **26**, which are explained further below. Base **12** may be made from a variety of suitable materials, such as plastic, for example. Base **12** may be transparent, so that the contents of container **10** may be seen through base **12**.

[0031] Base **12** includes retainer **18**, which holds optical disc **100** in place in base **12**. In the illustrated embodiment, retainer **18** comprises a plurality of upwardly extending, deflectable retainer members **36A, 36B, 36C**, which are spaced apart from one another about the circumference of a circle **38**. Circle **38** may be approximately the same size as the central bore **110** of optical disc **100**. In operation, optical disc **100** is located above base **12** with its central bore **110** approximately aligned with retainer **18**. A user then gently pushes optical disc **100** toward base **12**, such that retainer members **36** are deflected inwardly as they slide through the central bore **110** of optical disc **100**. The inward deflection of retainer members **36** causes retainer members **36** to exert outward pressure on the rim of central bore **110**. This outward pressure holds optical disc **100** in place in base **100**.

[0032] Those skilled in the art will appreciate that retainer **18** may be implemented via a large number of alternative embodiments (not shown). For example, retainer members **36** may extend inwardly prior to extending upwardly. Additionally or alternatively, one or more of retainer members **36** may comprise an outwardly extending lip (not shown) which helps to hold optical disc **100** in base **12**. Additionally or alternatively, retainer **18** may comprise a plurality of upwardly extending, non-deflecting guide rails (not shown) which are interposed between retainer members **36**. Such guide rails may have a slightly smaller radius of curvature than retainer members **36**, such that the guide rails maintain the position of optical disc **100** within base **12**. In general, retainer **18** may comprise any of the different types of optical disc retaining apparatus used with optical disc containers known in the art.

[0033] As shown in Figure 13A, the upper side of base **12** comprises base plane **30**. Base plane **30** is partially surrounded by rail **32** which extends upwardly from a perimeter of base plane **30** and which helps to contain and protect optical disc **100** in base **12**. Preferably, as shown best in Figure 14, rail **32** is located around the entire perimeter of base plane **30**, except in the region surrounding latch mechanism **26** where there is a gap **42** in rail **32**. Gap **42** facilitates handling of optical disc **100** and removal of optical disc **100** from base **12**. In alternative embodiments, rail **32** may completely surround base plane **30** or rail **32** may comprise a plurality of spaced apart arcuate sections. In further alternative embodiments, rail **32** is not present and retainer **18** holds optical disc **100** in place in base **12** without the assistance of a rail.

[0034] Base **12** may comprise an annular platform **34** which provides a plane that is raised upwardly from base plane **30**. When optical disc **100** is held in base **12** by retainer **18**, the annular non-data bearing portion **108** of disc **100** rests on annular platform **34**, such that the data bearing portion **102** of optical disc **100** is spaced apart slightly from base plane **30**. In this manner, annular platform **34** helps to prevent optical disc **100** from being damaged and to prevent the data stored on optical disc **100** from being corrupted. In alternative embodiments of the invention, platform **34** may comprise a plurality of platform elements which are raised from base plane **30**. Such platform elements may have a wide variety of shapes, but should be positioned to abut the annular non-data bearing portion **108** of optical disc **100** when it is held in base **12**. In other alternative embodiments, platform **34** is not present.

[0035] As shown in Figures 12A, 12B and 14, the perimeter of lid **14** has a shape similar to that of base **12** with straight edges **44A**, **44B**

extending from the sides of pivot joint **16** to respectively meet arcuate edges **46A**, **46B**. Arcuate edges **46A**, **46B** extend to meet either end of straight edge **48**, which forms part of a optional latch mechanism **26** (see Figure 20 and accompanying discussion below). As shown in Figure 12A, the top side **50** of lid **12** may be substantially planar. The bottom side of lid **14** may comprise a plurality of inwardly extending tabs **52**. The bottom side of lid **14** (Figure 12B) may also comprise a number of features that form part of pivot joint **16** and latch mechanism **26**, which are explained further below. Lid **14** may be made from a variety of suitable materials, such as plastic, for example. Preferably, lid **14** is transparent so that the contents of container **10** may be seen through lid **14**.

[0036] Container **10** may also comprise index label **56** and insert **54** (see Figure 14). Index label **56** and insert **54** may be made of cardboard, paper, and/or other suitable materials, and may comprise information and/or graphics relating to the data stored on optical disc **100**. For example, in the case where optical disc **100** is a CDR, index label **56** and/or insert **54** may contain information about the data recorded on the CDR. Depending on the nature of optical disc **100**, index label **56** and/or insert **54** may be blank, such that information may be recorded on index label **56** and/or insert **54** by users. Index label **56** and insert **54** may comprises a single sheet or a plurality of sheets.

[0037] Index label **56** may contain adhesive on a bottom side thereof, such that a user may adhere index label **56** to base plane **30** of base **12**. Alternatively, index label **56** may be adhered to base plane **30** during fabrication of container **10**. In still further alternative embodiments, the bore **58** of index label **56** may form a friction fit with platform **34** of base **12**. Index label **56** may also be loose. Inwardly

extending tabs **52** on lid **14** may function to hold insert **54** (see Figure 14). Insert **54** may also be loose.

[0038] As shown in Figure 14, index label **56** may also comprise an outwardly protruding tongue **60**, which extends through gap **42** and outwardly beyond flat edge **24** of base **12**. Tongue **60** may comprise information about the data stored on optical disc **100**. The information located on tongue **60** may be viewed by a user without having to open container **10** or having to view the top or bottom sides of container **10**.

[0039] As discussed above, lid **14** is pivotally coupled to base **12** at pivot joint **16**. Figure 18 shows a magnified view of a pivot joint **16** according to a particular embodiment of the invention. In the illustrated embodiment, pivot joint **16** comprises a semi-annular shaped lid member **66**, which extends downwardly from a lower surface of lid **14**, a semi-annular shaped base member **70**, which extends upwardly from an upper surface of base **12**, and a semi-annular groove **72** in the upper surface of base **12**. When assembled, semi-annular lid member **66** projects downwardly into groove **72** and semi-annular base member **70** projects upwardly into a semi-circular central bore **77** defined by an inner surface of semi-annular lid member **66**. A lower portion of semi-annular lid member **66** fits slidably within groove **72** and an upper portion of semi-annular base member **70** fits slidably against the inner surface of semi-annular lid member **66** to allow pivotal motion of lid **14** with respect to base **16**.

[0040] In the illustrated embodiment, semi-annular lid member **66** comprises a flange **68** at its lowermost extent and groove **72** comprises a correspondingly shaped notch **74** at its lowermost extent. When container **10** is assembled (i.e. base **12** is coupled to lid **14**), flange **68** and notch **74** cooperate to facilitate the pivotal motion of pivot joint **16**

and to prevent lid **14** from inadvertently coming apart from base **12**. Preferably, as shown in Figure 18, the transverse extent of flange **68** is relatively small, so that a user can separate lid **14** from base **12**, if desired, by deforming one or more of the components of pivot joint **16**. Those skilled in the art will appreciate that the location of flange **68** at the downwardmost extent of semi-annular lid member **66** and the location of notch **74** at the downwardmost extend of groove **72** are design choices. The same functionality could be achieved by locating flange **68** and notch **74** at other locations.

[0041] Referring to Figures 10, 11 and 18, container **10** comprises a hook **62** which may be used to hang container **10** from a rod (not shown) or to otherwise couple container **10** to a rod. In the illustrated embodiment, hook **62** comprises a finger **63**, which extends at least partially around a semi-circular bore **64** in pivot joint **16**. Semi-circular bore **64** is defined by the inner surface of semi-annular base member **70** of pivot joint **16**. The curved shape of finger **63** forms a curved channel **76**, which leads from semi-circular bore **64** and opens onto one of the straight edges **20A** on the perimeter of container **10**. The width of channel **76** may be less than the diameter of bore **64**. In particular, the width of channel **76** at the entrance **78** to bore **64** may be less than the diameter of bore **64**, such that a rod may cause a slight deformation of the sidewalls of channel **76** when inserted into bore **64**. In this manner, a rod may be secured in bore **64** of hook **62** once inserted therein, but will be removable by a user if desired. As shown in Figure 11, finger **63** may comprise a lid finger member **63A** and a base finger member **63B**. In alternative embodiments, finger **63** may comprise only lid finger element **63A** or only base finger element **63B**.

[0042] Figures 20A and 20B depict a magnified view of a latch mechanism **26** according to a particular embodiment of the invention.

Latch mechanism **26** comprises a latch tab **80** which projects downwardly from straight edge **48** of lid **14**. Latch tab **80** comprises a plurality of latch protrusions **82** which project inwardly from its inner surface. Latch mechanism **26** also comprises a corresponding plurality of latch indentations **84** in base **12**. Latch indentations **84** may be formed in rail **32** of base **12**, for example. When container **10** is in its closed configuration, as depicted in Figure 10, latch protrusions **82** project into latch indentations **84** to maintain the angular position of lid **14** relative to base **16** and to thereby secure container **10** in its closed configuration. In order to open container **10**, a user may cause latch tab **80** to deform outwardly by a small amount, disengaging latch protrusions **82** from latch indentations **84** and thereby allowing lid **14** to be pivoted relative to base **12**.

[0043] Latch mechanism **26** depicted in Figures 20A and 20B and discussed above represents only one type of latch mechanism which functions to prevent lid **14** from pivoting relative to base **12**. Those skilled in the art will appreciate that there are a variety of mechanisms similar to latch mechanism **26** and that such mechanisms may vary considerably, while achieving the desired functionality. By way of non-limiting examples, a latch mechanism may be located at a different position on a perimeter edge of container **10**; a latch mechanism may comprise protrusions and indentations of different shapes or locations; and/or a latch mechanism may comprise different types of fastener(s) altogether.

[0044] Figure 19 depicts a magnified plan view of an optional pivot joint locking mechanism **86**, which may be used in addition to, or as an alternative to, latch mechanism **26** to prevent lid **14** from pivoting relative to base **12**. Locking mechanism **86** comprises a shaft **90**, which has a user actuatable end **96** and a distal end **94**. A user may push or

pull the actuatable end **96** of shaft **90** to slide shaft **90** backward and forward (i.e. in the directions indicated by double-headed arrow **92**) within slot **88**. The user actuatable end **96** of shaft **90** may comprise a flange **95** which prevents shaft **90** from traveling too far into slot **88**. In the illustrated embodiment, shaft **90** and slot **88** are located in base **12**. When shaft **90** is fully inserted into slot **88**, its distal end **94** interrupts the operation of pivot joint **16**. More particularly, the distal end **94** of shaft **90** interrupts the movement of semi-annular lid member **68** within groove **72** (see Figure 18), thereby preventing the operation of pivot joint **16**.

[0045] Figure 16 is an exploded view of an optical disc container **210** according to an alternative embodiment of the invention wherein compound base **212** comprises an intermediate base member **212B** which is coupled to lower base member **212A**. Container **210** has substantially the same perimeter shape as container **10** described above (see Figure 14), but container **210** may be slightly thicker from its uppermost surface to its lowermost surface. Container **210** may be used to contain optical discs **100** (Figure 1) that are prerecorded with media content.

[0046] Lower base member **212A** comprises a base plane **230A** and a rail **232A**. In the illustrated embodiment, rail **232A** extends upwardly from the perimeter of base plane **230A** except in the region of gap **242A**, which may be used for a latch mechanism (not shown), and in the channel region **276A** for hook **262**. Rail **232A** may comprise a plurality of inwardly opening indentations **231A** which are positioned at spaced apart locations thereon. Intermediate base member **212B** fits slidably into lower base member **212A**. Intermediate base member **212B** comprises a base plane **230B** and a rail **232B**. In the illustrated embodiment, rail **232B** extends upwardly from the perimeter of base

plane **230B** except in the region of gap **242B**, which may be used for the latch mechanism and in the channel region **276B** for hook **262**. Rail **232B** may comprise a plurality of outwardly projecting protrusions **231B** which are positioned at spaced apart locations thereon. The upper side of intermediate base member **212B** also comprises platform **234** and retainer **218**, which may be substantially similar to platform **34** and retainer **18** described above in relation to container **10**.

[0047] Intermediate base member **212B** may be coupled to lower base member **212A** to form compound base **212** by inserting intermediate base member **212B** into lower base member **212A**, such that protrusions **231B** project into indentations **231A**. Once intermediate base member **212B** and lower base member **212A** are coupled, compound base **212** functions in a manner substantially similar to base **12** described above in relation to container **10**.

[0048] Lower base member **212A** is preferably made of transparent material, such as clear plastic, for example. Lower label **211** may be inserted between lower base member **212A** and intermediate base member **212B**. Lower label **211** may be made of cardboard, paper or other suitable materials, and may comprise information and/or graphics relating to the data stored on optical disc **100**. For example, in the case where optical disc **100** is a DVD, lower label **211** may contain graphics and information about the video programming stored on the DVD. Depending on the nature of optical disc **100**, lower label **211** may be blank, such that information may be recorded thereon.

[0049] Lid **214** of container **210** may be substantially the same as lid **14** described above in relation to container **10**. The bottom side of lid **214** may comprise tabs **252** which extend inwardly from spaced apart locations on the perimeter of lid **214**. Tabs **252** may function to hold

insert **254**. Tabs **252** and insert **254** may be substantially similar to tabs **52** and insert **54** described above in relation to container **10**.

[0050] In other respects, container **210** may be substantially similar to container **10** of Figures 10-15. In particular, hook **262**, pivot joint **216** and latch **226** of container **210** may be substantially similar to hook **62**, pivot joint **216** and latch **226** of container **10**. Accordingly, the specifics of these components of container **210** are not described further herein.

[0051] Figure 17 is a cross-sectional view of a multiple optical disc container **310** according to another alternative embodiment of the invention. Multiple disc container **310** comprises a base **312** and a lid **314** which may be substantially similar to base **12** and lid **14** described above in relation to container **10**. Multiple disc container **310** also comprises intermediate member **302**. Intermediate member **302** has a bottom side **304**, which comprises features which are substantially similar to the bottom side of lid **314**, and an upper side **306**, which comprises features that are substantially similar to the upper side of base **312**. Base **312**, lid **314** and intermediate member **302** may be pivotally coupled to one another at pivot joint **316**, such that base **312**, lid **314** and intermediate member **302** may each independently pivot with respect to one another. When coupled in this manner, a first optical disc (not shown) may be retained between the upper side of base **312** and the bottom side **304** of intermediate member **302** and a second optical disc may be retained between the upper side **306** of intermediate member **302** and the bottom side of lid **314**.

[0052] Pivot joint **316** allows base **312**, lid **314** and intermediate member **302** to independently pivot with respect to one another. The bottom side **304** of intermediate member **302** may comprise pivot joint

components that are substantially similar to the pivot joint components of lid **14** of container **10** described above (see Figure 18). More specifically, the bottom side **304** of intermediate member **302** may comprise a downwardly extending semi-annular member **366'**, which partially surrounds a perimeter of a semi-circular bore **377'** and which may have a flange **368'** at its lowermost extent. When intermediate member **302** is coupled to base **312**, downwardly extending semi-annular member **366'** projects downwardly into groove **372** of base **312** and upwardly extending semi-annular base member **370** projects upwardly into semi-circular bore **377'**. Downwardly extending semi-annular member **366'** fits slidably within groove **372** and semi-annular base member **370** fits slidably against an inner surface of semi-annular member **366'** to allow pivotal motion of intermediate member **302** with respect to base **312**. Flange **368'** on the lowermost extent of downwardly extending semi-annular member **366'** may fit into a correspondingly shaped notch (not shown) in groove **372** to prevent intermediate member **302** from inadvertently coming apart from base **312**. If desired, a user may separate base **312** and intermediate member **302** by deforming one or more of semi-annular members **366'**, **370** or groove **372**.

[0053] The upper side **306** of intermediate member **302** may comprise pivot joint components that are substantially similar to the pivot joint components of base **12** of container **10** described above (see Figure 18). More specifically, the upper side **306** of intermediate member **302** may comprise a semi-annular groove **372'** and an upwardly extending semi-annular member **370'**. When intermediate member **302** is coupled to lid **314**, downwardly extending semi-annular lid member **366** projects downwardly into groove **372'** and upwardly extending semi-annular member **370'** projects upwardly into bore **377** of semi-annular lid member **366**. Semi-annular lid member **366** fits

slidably within groove **372'** and upwardly extending semi-annular member **370'** fits slidably against an inner surface of semi-annular lid member **366** to allow pivotal motion of intermediate member **302** with respect to lid **314**. Flange **368** on the lowermost extent of semi-annular lid member **366** may fit into a correspondingly shaped notch (not shown) in groove **372'** to prevent intermediate member **302** from inadvertently coming apart from lid **314**. If desired, a user may separate lid **314** and intermediate member **302** by deforming one or more of semi-annular members **366**, **370'** or groove **372'**.

[0054] Container **310** may be provided with an independent latch mechanism **326** between the bottom side **304** of intermediate member **302** and base **312** and an independent latch mechanism **327** between the upper side **306** of intermediate member **302** and lid **314**. More particularly, the bottom side **304** of intermediate base member **302** may comprise a downwardly extending latch tab **380'** with latch protrusions **382'**. Latch tab **380'** and latch protrusions **382'** may function in a manner substantially similar to latch tab **80** and protrusions **82A**, **82B** of container **10** (see Figure 20). Together, latch tab **380'** and latch protrusions **382'** on the bottom side **304** of intermediate member **302** and latch indentations **384** on base **312** provide a user-openable latch mechanism **326** between base **312** and intermediate member **302**. The top side **306** of intermediate base member **302** may comprise a plurality of latch indentations **384'**. Latch indentations **384'** may function in a manner substantially similar to latch indentations **84A**, **84B** of container **10** (see Figure 20). Together, latch indentations **384'** on the upper side **306** of intermediate member **302** and latch tab **380** and latch protrusions **382** on lid **314**) provide a user-openable latch mechanism **327** between lid **314** and intermediate member **302**.

[0055] In other respects, container **310** may be substantially similar to container **10** of Figures 10-15. In particular, hook **362**, of container **310** may be substantially similar to hook **62** of container **10**. Finger **363** of hook **362** may comprise a lid finger member, a base finger member and an intermediate finger member. In alternative embodiments, finger **363** may comprise any one or any pair of a lid finger member, a base finger member and an intermediate finger member. The additional specifics of hook **362** are not described further herein.

[0056] Those skilled in the art will appreciate that container **310** is not limited to having a single intermediate member **302**. Container **310** may comprise a plurality of intermediate members **302** to provide a container capable of housing a plurality of optical discs. For example, container **310** may comprise two intermediate members **302'**, **302''** interposed between lid **314** and base **312**. Such an embodiment is capable of housing three optical discs.

[0057] As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and modifications are possible in the practice of this invention without departing from the spirit or scope thereof. For example:

- Containers **10**, **210**, **310** respectively comprise hooks **62**, **262**, **362**. Accordingly, they may be coupled to rods (not shown) in a manner similar to container 1 (Figure 3). As such, containers **10**, **210**, **310** may be used together with any of the storage and transport apparatus depicted in Figure 4-9. In general, containers **10**, **210**, **310** may be used together with any storage and transport apparatus comprising one or more rods to which the containers may be coupled.
- Pivot joint **16** depicted in Figure 18 and the other illustrated embodiments represents only one possible type of pivot joint. Those skilled in the art will appreciate that there are a wide

variety of pivot joints that could provide the same functionality as that of the illustrated embodiments. The invention should be understood to include any pivot joint which allows pivotal motion of lid **14** with respect to base **12**. Preferably, such pivot joints comprise a bore within their perimeters and the channel **76** of hook **62** terminates in this bore.

- In the illustrated embodiments, hook **62** is located in a corner of container **10** and comprises a channel **76** that terminates at semi-circular bore **64**. Bore **64** is formed by an inner surface of semi-annular base member **70** of pivotal joint **16**. In alternative embodiments, hook **62** may be located in different parts of container **10**. For example, hook **62** may be formed in a different corner or on a side of container **10**.
- Pivot joint **16** is described and depicted (see Figure 18) as having certain components in lid **14** (i.e. semi-annular lid member **66**, flange **68**, and bore **77**) and other components in base **12** (i.e. semi-annular base member **70**, groove **72**, notch **74** and bore **64**). Those skilled in the art will appreciate that a pivot joint may also be formed by interchanging the joint components on lid **14** and the joint components on base **12**.
- Bore **64** of hook **62** and pivot joint **16** are described and depicted as being semi-circular in shape. In alternative embodiments, the interior surface of bore **64** may have other shapes. For example, the interior surface of bore **64** may be shaped to allow coupling of hook **62** to rods which have a different shape.
- Figure 21 depicts a container **510** according to another alternative embodiment of the invention. In Figure 21, container **510** is in a partially open configuration. An optical disc **100** may be housed in container **510** in a space **513** between base **512** and lid **514**. As with the previously described embodiments, base **512** is pivotally coupled to lid **514** at pivot joint **516**, which allows lid **514** to pivot relative to base **512** about a pivot axis that is substantially orthogonal to the page. Pivot joint **516** of container **510** may

generally be any type of pivot joint. Container **510** comprises other features similar to those of container **1** (Figure 2) and container **10** (Figures 10-15). However, hook **562** of container **510** is formed from a separate hook member **561** which extends outwardly from at least one of base **512** and lid **514**. Preferably, but not necessarily, hook member **561** may be coupled to pivot joint **516** such that it may pivot about the pivot axis with respect to base **512** and/or lid **514**.

[0058] Accordingly, the scope of the invention is to be construed in accordance with the substance defined by the following claims.